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BILL HASLAM
Governor

TO: Dr. Joe DiPietro

FROM: Mike Krause

SUBJECT: University of Tennessee at Chattanooga
Letter of Notification: Mechatronics Engineering Technology
Bachelor of Applied Science (BAS)

DATE: February 8, 2018

In accordance with THEC policies, colleges and universities are required to submit Letters of Notification for authorization to proceed with developing proposals for new academic programs. The THEC Financial Projection Form for the proposed program must accompany the letter of notification to plan. Upon THEC approval to proceed with developing proposals, institutions should do so in a manner consistent with THEC policies and criteria.

Proposed programs must document relevance to institution's mission, provide enrollment, graduation and financial projections, document employer and student demand, describe the anticipated evaluation process, and certify that the proposed program will not unnecessarily duplicate existing offerings at other Tennessee public institutions. The proposal must ensure faculty sufficiency, existence of student support resources, and adequacy of library, space, equipment, and technology.

I approve UT Chattanooga's Letter of Notification (LON) to plan the Mechatronics Engineering Tech, BAS program. As the institution develops the New Academic Program Proposal (NAPP), all concerns identified in the LON evaluation must be addressed in a separate document and/or clearly referenced in the NAPP. It is understood that the proposed program will be in accordance with the institutional mission and will meet *Tennessee Public Agenda for Higher Education 2015-2025* degree completion and workforce development objectives.

The LON projects implementation of an approved Mechatronics Engineering Technology BAS program in Fall 2018. Please be advised that the approval and the attached LON evaluation will be posted on the THEC website for public disclosure.

Attachment

cc: Dr. Linda Martin
Dr. India Lane
Dr. Steve Angle
Betty Dandridge Johnson

Tennessee Higher Education Commission
Letter of Notification Evaluation
February 8, 2018

THEC

Institution: University of Tennessee-Chattanooga	**LON Submission Date**: October 4, 2017 **Response to Concerns**: January 29, 2018 * (Reference to comments in italics).
Academic Program, Degree Designation: Mechatronics Engineering Technology, BAS	
Proposed CIP Code: 15.0403 (Electromechanical Technology/Electromechanical Engineering Technology)	
Proposed Implementation Date: Fall 2018	
Time Period Posted on Website for Public Comment: October 4-19, 2017	

Criteria	Comments
Letter of Support from President/Chancellor	▪ September 2017 letter provided from Chancellor Angle to President DiPietro.
Overall Comments	▪ The proposed 127 SCH program is a 2 +2 mechatronics ET program. A relevant AAS (i.e., in engineering, technology or related field, per p. 6) is required for admission with 62-67 additional hours to be completed at UTC. The proposed program addresses a seamless transition from community college and guarantees that all AAS courses will be accepted. The program will be offered as a year round program with the option of only attending fall-spring. Classes will be offered as hybrid, or online in the evening. A total of 11 new courses are proposed. The program is designed to meet ABET accreditation requirements in ET, exceeding the minimum SCH ABET requirements. ET Department Head is proposed to serve as program coordinator but with three programs, this may overload the department head. ▪ *Will the proposed program employ the Siemens' model?* **UTC Response:** The UTC BAS degree program will employ the Siemen's model. The financial statement includes a one-time $15,000 expense for Siemen's certification training. In addition, $50,000 is budgeted for equipment and training to initiate the Siemens certification process. The minimum system requirement for MecLab, the Siemen's-approved Mechatronics Training System (FESTO), starts from $50,000. UTC will apply for federal and state level grants to gain additional support for its labs. ▪ *Tables 2, 3, & 4 should be retitled from "Engineering Graduates" to "Engineering Technology Graduates".* **UTC Response:** Tables updated. ▪ *In relation to curriculum, page 15 of the LON states the first math class will be Calculus 1 but ABET recommends Pre-Calculus as the first math class. CPSC 1000 is required but ABET requires a Procedural*

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	Programming Language course. UTC should check with ABET on these requirements. **UTC Response:** Students take the Pre-Calculus 1 requirement at the community college as part of the AAS degree. In addition, concerning the statements posed about ABET requirements and a procedural programming course, UTC is knowledgeable of ETAC-ABET standards as delineated by program titles in the Criteria for Accrediting Engineering Technology Programs, 2018-2019, Section II. Program Criteria in which some, but not all, program titles require programming language. ABET clearly states that programs may focus on preparing graduates with in-depth but narrow expertise, while other programs may choose to prepare graduates with a broad spectrum of expertise. The depth and breadth of expertise demonstrated by baccalaureate graduates must support the program educational objectives. UTC believes the curriculum described in the BAS proposal supports the stated program objectives and is consistent with its focus and ABET standards. ▪ *Also, the Interior Design program CAS course may not have the technical content required for Engineering Technology programs especially in terms of tolerance and geometric dimensioning.* **UTC Response:** The Interior Design courses, IARC Computer Aided Design I & II support the ABET learning requirement that students demonstrate the use of computer-aided drafting and design software. In these courses, Engineering Technology faculty will work with course instructors to ensure that student assignment allow students to integrate engineering principles and demonstrate the appropriate learning objectives.
Purpose and Nature of Program	▪ This 2 + 2 program offers a means for AAS students to continue their degree progression from the community college using the transfer pathways available at Chattanooga, Cleveland and other AAS graduates within the TBR system who wish to pursue a BAS.
Alignment with State Master Plan and Institutional Mission	▪ The proposed program aligns with the institutional mission and the state master plan.
Feasibility Study	
Student Interest	▪ Appendix F which contains the student survey which consisted of students at Chattanooga State only. High school students planning to attend Chattanooga State Community College and were asked if they would be interested in a Bachelors in Mechatronics Engineering Technology at UTC. TCAT Chattanooga and currently enrolled AAS student at ChSCC were also asked of their interest in a 2 + 2. It would appear they likely will meet enrollment based on the Chattanooga area. ▪ *As UTC proposed Cleveland State Community College as a possible feeder, it would have been beneficial for the student survey to have included students from this community college as well.* **UTC Response:** Cleveland State students often articulate to UTC to complete various baccalaureate degree majors. In mid-2017, Cleveland State enthusiastically invited UTC faculty to meet about

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	their new (fall 2017) Mechatronics Technology AAS degree. During that meeting, Dr. Alp was able to converse directly with students enrolled in the new Cleveland State degree program, as well as in other engineering technology areas of study. There she described UTC's efforts to develop the BAS degree path. The possibility of a path from an AAS degree to a relevant and locally available BAS degree was well received, especially with the strong jobs prospects in local industries, such as Wacker Chemi, Inc. and Volkswagen USA. For completeness, this information was added to the proposal. ▪ *AS UTC does not require 41 SCH in General Education which is currently a community college requirement imposed by TBR and the proposed program is requiring only 33 SCH, how till the remaining 8 hours be transferred into the program? MTSU, currently the only other program in the state to offer a Mechatronics Engineering Technology degree, requires 41 General Education SCH. This discrepancy in the hours may: 1) create confusion for the student or 2) increase work at UTC with reverse transfer should students opt to not complete their community college degrees; and 3) reduce potential for transfer from UTC to MTSU should that occur. How will UTC address these issues for the potential student?* **UTC Response:** The comments about General Education from THEC and MTSU raise important questions about general education requirements and college completion in Tennessee. The UTC BAS program proposed here is a direct response to the need for AAS students to further their education and employment opportunities; general education requirements are limited (by only 7 credit hour requirements) to enable a seamless transition from local community college applied associate degrees and to prevent adding burdensome additional credits. As noted in the comment from MTSU, applied associate degrees by design have fewer general education requirements. Appendix A of the UTC proposal details these articulation paths and specifically states "Students may accumulate additional course credits based on previous college credits derived from additional electives, changes in major, and/or transfer from other institutions. Every student goes through advising and every effort is made to accept credits from their previous transfer courses and experience (p. 42)." This commitment fulfills UTC's requirement to facilitation articulation and transfer into the new proposed program.
Local and regional need	▪ Given the economic growth in the Chattanooga region, the need for the proposed program is likely as shown in Table 9 – Employment Forecasts as reflected on page 24.
Employer need/demand	▪ The proposal is in response to requests from local and regional manufacturers. Letters of Support are provided in Appendix E. They include TVA, BASF and Miller Industries.
Future sustainable need/demand	▪ The proposed program intends to enroll from 10-25 students and graduate on average 12-15 students over the next five years. That is in keeping with the projected employment without exceeding

Criteria	Comments
	projected regional demand.
Supporting Documentation of Costs Met through Internal Reallocation or Other Sources	▪ Cost of program will be met through tuition dollars. No institutional reallocation of funds is needed.
THEC Financial Projection Form	▪ *Are there sufficient faculty members already Level 3 certified? Or better yet, will adding only one more Level 3 be sufficient add the $15,000 in year three will only cover training for one faculty member.* **UTC Response:** UTC has sufficient Level 2 faculty members to start this degree program, through a combination of full-time UTC faculty and adjunct faculty from Chattanooga State. Level 3 certification is not required to start this degree program. Nevertheless, the program will pursue Level 3 certification, as indicated by the proposed funding for training and equipment. Training for Level 3 is now offered by Middle Tennessee State University; therefore, UTC faculty will not have to travel to Germany for the training, and the budgeted expense will be adequate.
Institutional Capacity to Deliver the Proposed Program	▪ There are currently five faculty and they are hiring for a sixth position. These faculty members cover three programs (including the proposed program. ▪ *If a NAPP is required, enrollments and graduates for each program in which faculty members teach should be provided as well as a chart of individual faculty course assignments.* **UTC Response:** UTC believes it has the capacity to deliver the proposed BAS program. In addition to the five full-time faculty members in UTC's Engineering Management and Technology (EMT) Department, EMT currently maintains 4-6 adjunct faculty members per year. The strength of this team of adjunct faculty is evident in their professional work experience and credentials. The Department of Engineering Management and Technology will hire additional faculty, including adjuncts, as the program demonstrates need and growth.
No Unnecessary Duplication	▪ UTC is proposing a BAS in Mechatronics Engineering Technology which eliminates the potential duplication at MTSU (Mechatronics Engineering BS program). ETSU offers the only BAS program in the state and this is a General Applied Science degree (CIP code of 24.0101).
Public Comments	▪ The Letter of Notification for the proposed Mechatronics Engineering Technology, Bachelor of Applied Science program was posted on the THEC website for a 15 day period from October 4-19, 2017. The following comments were provided by one institution: o We have a concern relative to the General Education requirements of the proposed degree. Most B.A.S. degrees require fewer general education courses that traditional B.S. or B.A. degrees and this degree follows that pattern by only requiring 33 hours. Currently, universities in Tennessee require 41-42 hours across a fairly standardized group of subject areas (e.g., Mathematics, History, Physical Science, Communication, Humanities, Social & Behavioral Sciences) in order to fulfill the

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	general education requirement. Tennessee's public universities are also required to accept completion of the general education curriculum (or completion of a component) at one Tennessee school as meeting their general requirement when a student transfers. While it may be unlikely that a student who enrolls in the Mechatronics Engineering Technology B.A.S. program at UTC would later consider transferring to the Mechatronics Engineering B.S. program at MTSU, it is possible. Would we be required to credit this student with completion of our general education requirement? It would seem so under the current policy on transferability of general education credits and if so, we ask this be addressed in the THEC response to the LON.